Information Science and Technology Center Seminar Series

Leonid Gurvits
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"Hyperbolicity, (Strong) Log-Concavity, Complexity and All That Jazz"

Wednesday, May 18, 2011
3:00 - 4:00 PM
TA-3, Bldg. 1690 Room 102 (CNLS Conference Room)

Abstract: The eminent computer scientist Donald Knuth gave a recent lecture at Stanford "Leonid Gurvits breakthrough about lower bounds for the permanent" (http://www.algorithmsillustrated.com/2011/01/).

I will present in this Los Alamos lecture a broader (and, of course, more personal) picture, as from historical as well technical point of view. The roots of the breaktrough(s) will be traced back to the Isaak Newton Inequalities and two, seemingly unrelated, discoveries by Herman Minkowski: his intepretation of Einstein's Special Relativity in terms of Hyperbolic Geometry; and his approach to the Isoperimetric Inequality for the convex bodies via the Mixed Volumes. Time permitting, I will finish the lecture in the Fock Space(in the realm of Quantum Linear Optics).

The lecture should be accessible to a broad, yet mathematically (or aesthetically, which is almost the same) minded, audience.

Biography: Leonid Gurvits received his Ph.D in mathematics from Niznii Novgorod State University (USSR) in 1985. He is currently Scientist-5 at CCS-3. Leonid is world renowned for his breakthrough results in Mathematics, Control Theory, Theoretical Computer Science and Quantum Information.